

Case Report:

Dietary deficiency of iron – an extreme example

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Accepted 20 July 1995

Iron deficiency anaemia is still a problem in childhood, and even mild anaemia may interfere with psychomotor development. Occasionally, very severe anaemia is seen in paediatric wards. We present an extreme example of anaemia secondary to dietary deficiency of iron.

CASE REPORT: A three and a half year old girl was admitted with lethargy and extreme pallor. The history was of increasing lethargy for three weeks with nothing to suggest acute or chronic blood loss. She was not troubled with recurrent infections but her mother described her as a “picky” eater who had sustained herself almost exclusively on cow’s milk for one year. On examination she was severely anaemic with signs of marked congestive heart failure. Temperature was normal. There was no bruising, koilonychia or glossitis. Weight which was on the tenth centile at birth had dropped to the third centile and height was on the tenth centile.

Chest radiography showed marked congestive heart failure, and an electrocardiograph demonstrated right ventricular strain. Prior to transfusion haemoglobin was 1.3 g/dl, MCV 56 fl, white cells $7.9 \times 10^9/l$, platelets $62 \times 10^9/l$. The blood film was consistent with iron deficiency anaemia with normal white cell morphology. Serum ferritin was 4.2 µg/litre, serum iron 1.3 µmol/litre, total iron-binding capacity 102.3 µmol/litre and the transferrin was 1.3% saturated. Other investigations were performed post transfusion. Serum B₁₂, folate, copper, zinc, urea, electrolytes, calcium, thyroid and liver function were normal. Anti-gliadin and anti-endomysial antibody screening was negative. Faecal occult bloods were negative and there was no haematuria.

She was slowly transfused with semi-packed cells with diuretic cover for 48 hours. Her heart failure resolved and she was commenced on oral folate and iron. Three days after commencing her oral therapy haemoglobin had risen to 9.0 g/dl, MCV to 77 fl and platelets to $630 \times 10^9/l$ with a reticulocytosis of 5%. One week after transfusion, echocardiography revealed a small pericardial effusion but good ventricular function. Two months later haemoglobin was 12.6 g/dl and oral iron was stopped with no recurrence of anaemia. Repeat echocardiography showed only a rim of pericardial fluid anteriorly and good left ventricular function. Over the following six months her weight gradually increased from the third to the fiftieth centile and her height from the tenth to the twenty-fifth centile.

DISCUSSION

This child had been breast fed for six months. Her mother did not require extra iron during the pregnancy but had a blood transfusion in the post partum period. Solids were introduced

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at the age of six months and at this stage a formula milk was substituted for the breast. By all accounts she thrived until she was two when her younger sister was born. It was at this time that the child began to refuse all food except cow's milk with occasional toast and breakfast cereal. She also took Abidec vitamin drops for six months after the age of two. She displayed pica and chewed her father's slippers and watch-strap.

Dietary analysis showed minimal iron sources in her diet. The small amount of iron in the cereal would not have been absorbed well because of the lack of vitamin C and the presence of phytates in the cereal.¹ The family had little contact with their general practitioner. When the child was last seen medically at two and a half years she was felt to be well, with weight on the fiftieth centile. On two occasions in the past year the health visitor had been concerned about the child's pallor but further help was not sought. Her younger sister had also developed an iron deficiency anaemia.

Iron deficiency is increasingly recognised as a systemic disease.^{2,3} This child readily passed the fiftieth centiles in the Denver Developmental Screening test but this does not prove optimal psychomotor development as she might have achieved more had her iron stores been normal. The possibility of coeliac disease was considered but jejunal biopsy was not thought to be necessary when she responded so well to oral iron.

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